



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/811,628

03/29/2004

Tapesh Yadav

2732

24959 7590 10/17/2008
PPG INDUSTRIES INC
INTELLECTUAL PROPERTY DEPT
ONE PPG PLACE
PITTSBURGH, PA 15272

EXAMINER

LE, HOA T

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

10/17/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/811,628

Applicant(s)

YADAV ET AL.

Examiner

H. T. Le

Art Unit

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 4-42 and 45 is/are pending in the application.
- 4a) Of the above claim(s) 4, 6-18, 24-27, 30-32 and 35-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 5, 19-23, 28, 33, 34 and 45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

CLAIM REJECTIONS - 35 USC § 112

A. PREVIOUS REJECTIONS

2. **Claims 1, 5, 19-23, 28, 33, 34, and 45 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement as set forth in the last office action and further discussed below.** The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

2.1. As stated in the last office action, although the specification describes a method of making polymetallic material having an aspect ratio of up to 25 (paragraphs [0090], [0093], and [0096]), such method is not described to extend to chalcogenides in terms of aspect ratio. How the same method can be applied to chalcogenides to obtain an aspect ratio of greater than 5 is not described. Chalcogenides and polymetallic materials are two chemically and physically different materials. Therefore, a method that is successful in making one material of certain morphology cannot be used to produce the other with the same morphology. The specification fails to describe how that can be done, and thus the claims are based on a non-enabling disclosure. More particularly, the method of making non-stoichiometric materials as described at paragraphs [0120] to [0129] can not be resulted in a structure wherein the aspect ratio

is at least 5. The method as disclosed in these paragraphs does not enable one of skilled in the art to control or manipulate the production conditions such that an aspect ratio of greater than 5 can be resulted for non-stoichiometric.

2.2. Applicant argued that the specification provides support for chalcogenide nanomaterials having an aspect ratio as claimed by citing paragraphs 170 and 172 which report WO_3 having an aspect ratio of 5 to 15 and W-doped- TiO_2 having an aspect ratio of 3-20. However, metal oxides are NOT a chalcogenide. In addition, none of these materials is non-stoichiometric as required by claims 1 and 33 or possesses a faceted morphology as required by claim 19.

B. NEW GROUND OF REJECTIONS

3. Claim 45 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for chalcogenide comprising S, Se and Te, does not reasonably provide enablement for the inclusion of oxygen element. The term "chalcogenide" as accepted in the art defines a binary compound containing a heavy chalcogen and an electropositive element. Although oxygen is a chalcogen, it does not qualify as a heavy chalcogen. Therefore, the art-accepted meaning of chalcogenide precludes oxygen and includes only S, Se and Te. Claim 45 which recites oxygen as one of the elements in the chalcogenide is outside the meaning accepted in the art. The specification is not written or defined 'chalcogenide' as having a definition different from what is accepted in the art. Thus, claim 45 raises new matter issue. Cancellation of claim 45 is required to obviate this rejection.

4. Newly added claim 45 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

By definition, "chalcogenide" is a binary compound containing a heavy chalcogen and an electropositive element. Although oxygen is a chalcogen, it does not qualify as a heavy chalcogen. Therefore, chalcogenide as used by one skilled in the art precludes oxygen and includes only S, SE and Te. Claim 45 which recites oxygen as one of the elements in the chalcogenide renders the claim meaningless and fails to claim the subject matter which applicant regards as the invention.

CLAIM REJECTIONS - 35 USC § 102/103

A. PREVIOUS REJECTIONS

5. Claims 1, 5, 19-23, 28, 33, 34, and 45 are rejected under 35 U.S.C. 102(b) or (e) as being anticipated by Bickmore et al (US 5,984,997) as applied to the rejection to claims 1-3, 5, 19-23, 28, 33, and 34 set forth in the last office action and further discussed below.

5.1. Bickmore teaches a method of making nanowhiskers and/or nanorods of chalcogenides with aspect ratios in a range of 1-25 (see col. 2, lines 20-29 and 65-67). The nanomaterials include non-stoichiometric chalcogenides (col. 2, lines 30-37). S-, Se-, and Te-containing chalcogenides are suggested at col. 3, lines 65-67 and col. 6, lines 23-31.

5.2. Applicant argued that "the examples at columns 6-9 of Bickmore are believed to make stoichiometric products." However, non-stoichiometric chalcogenides made by

emulsion combustion are reported in Bickmore at col. 2, lines 30-37. In addition, "whisker" is defined by Bickmore as having faceted morphology (col. 3, lines 19-22).

B. NEW GROUND OF REJECTIONS

6. Claims 19 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Gibson et al (US 6,156,428).*

7. Gibson teaches metal nanoparticles having an anisometric morphology (claim 1) which includes platelets. Thus the nanoparticles have a faceted morphology. The nanoparticles have an aspect ratio of at least five and up to 20 (col. 6, lines 20-23).

8. Claims 1, 5, 19-23, 28, 33, 34, and 45 are rejected under 35 U.S.C. 102(b) or (e) as being anticipated by US 6,344,271 ("US'271").

8.1. As discussed in the last office action, the present application is entitled only to the filing date of the Application No. 10/449,278, which is May 30, 2003.

8.2. US'271 teaches a non-stoichiometric nanomaterial (col. 2, lines 48-57 and col. 8, lines 58-67) which includes chalcogenides (col. 5, lines 47-50). The nanomaterial has an aspect ratio greater than 1 and up to 10^6 (see US' 271, col. 9, lines 5-9) which encompasses the claimed aspect ratio of 5-15. Chalcogenides automatically include an element of S, Se or Te. Besides those elements, non-stoichiometric oxygen-containing nanomaterial also discussed in US'271 at col. 9, lines 12-22.

Double Patenting

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the

* Provided in the previous office action.

unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. **Claims 1, 5, 19-23, 28, 33, 34 and 45 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 11, 14, 20, 23, and 35-45 of U.S. Patent No. 6,344,271 ("US'271").** Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims and the referenced claims describe the same subject matter. The only difference is that the referenced claims do not specify the aspect ratio of the nanomaterial. However, nanomaterial by definition of the conflicting patent (US'271) means nanomaterial having an aspect ratio of greater than 1 and less than 10^6 (see US' 271, col. 9, lines 5-9) which encompasses the claimed aspect ratio of 5 to 25.

Examiner's Notes/Warning:

11. Applicant is advised that the delay of filing the instant claims, which claims in this case are broader than the claims of previously related applications, without the benefit

of a restriction requirement, may give the appearance of prosecution latches. The doctrine of prosecution latches renders patented claims unenforceable. In re Bogese II, 303 F.3d 1362, 1369 (Fed. Cir. 2002).

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to H. T. Le whose telephone number is 571-272-1511. The examiner can normally be reached on 9:30 a.m. to 6:00 p.m., Mondays to Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on 571-272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. (Holly) T. Le/
Primary Examiner, Art Unit 1794

October 14, 2008